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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,860	08/07/2002	Andrew Philip Jeapes	5648	2359

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EXAMINER

HERTZOG, ARDITH E

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/049,860

Applicant(s)

JEAPES ET AL.

Examiner

Ardith E. Hertzog

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 14-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 14-16 and 19-21 is/are rejected.
- 7) ☒ Claim(s) 6-10, 17 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment filed March 21, 2005; a decision on the accompanying petition was mailed May 4, 2005. Claims 1-10 and 14-21, per said amendment, are pending.
2. The 37 CFR § 1.75(c) objection to claims 4-21, as set forth in paragraph 8. of the prior Office action with mailing date September 21, 2004 (hereinafter "the 9/21/04 action"), has been **overcome** by amendment.
3. The objection to the disclosure, as set forth in paragraph 9. of the 9/21/04 action, has been **overcome** by amendment.
4. The 35 U.S.C. § 112, second paragraph, rejection of claims 1-3, as set forth in paragraph 13. of the 9/21/04 action, has been **withdrawn**, in view of applicant's amendment and accompanying remarks. That is, it is now agreed that "claim 1 [i.e., the sole independent claim)] is definite within the meaning of §112" (remarks accompanying amendment in full paragraph on p. 12).
5. The 35 U.S.C. § 112, second paragraph, rejection of claim 3, as set forth in paragraph 14. of the 9/21/04 action, has been **overcome** by amendment.

Oath/Declaration/Inventorship

6. The declaration is no longer considered defective, **for those reasons set forth as a. and b. in paragraph 3. of the 9/21/04 action**. In particular, **with respect to a.**, a review of this application as a whole makes **clear** that it has been filed under 35 U.S.C.

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§ 371 based upon International Application PCT/GB00/03234 filed August 21, 2000, which in turn claims foreign priority under 35 U.S.C. § 119(a)-(d) based upon Great Britain application 9919606.5 filed August 19, 1999, and, **with respect to b.**, the supplemental application data sheet filed March 21, 2005 lists the full name of each inventor (family name and at least one given name together with any initial). **However.**

7. The declaration is **still** considered defective, for those reasons set forth in the "Decision On Petition Under 37 CFR § 1.182" mailed May 4, 2005, **said decision being expressly incorporated by reference herein.**

Claim Rejections - 35 U.S.C. § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-5, 14-16 and 19-21 are rejected under 35 U.S.C. § 112, first paragraph, because the specification, while being enabling for methods for treating a spent ionic liquid composition, which comprises the **specific** ionic liquid composition, 1-methyl-3-ethylimidazolium chloride, and contaminants, comprising: heating said spent ionic liquid composition under reduced pressure at or below 2 mm Hg to a temperature in a range from 200°C to 300°C so as to form a partial decomposition product thereof, separating said partial decomposition product from said contaminants and regenerating said ionic liquid composition from the separated partial decomposition product, does not reasonably provide enablement for methods for treating a spent ionic liquid composition, which comprises **any** ionic liquid and contaminants, comprising the aforementioned

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steps. It is respectfully maintained that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims, since only a **single** species of suitable "spent ionic liquid composition" and corresponding "partial decomposition product[s] thereof" appear to be disclosed (i.e., 1-methyl-3-ethylimidazolium chloride and its partial decomposition products of 1-methylimidazole, 1-ethylimidazole, chloromethane, and chloroethane (see paragraph bridging pp. 2-3 of the specification, as well as p. 4, lines 3-5, therein)), for which the **single** set of suitable heating temperature and pressure limitations disclosed (i.e., temperature from 200°C to 300°C, and pressure at or below 2 mm Hg (see p. 3, lines 15-16, 24-27, of the specification)) is effective. **Furthermore**, applicant states that:

When 1-methyl-3-ethylimidazolium chloride is heated under reduced pressure, the ionic liquid partially decomposes to give 1-methylimidazole, 1-ethylimidazole, chloromethane, and chloroethane. In the initial experiments the thermolysis products were left for two days at room temperature and re-acted to produce a mixture of 1,3-dimethylimidazolium chloride, 1,3-diethylimidazolium chloride, and 1-methyl-3-ethylimidazolium chloride. **These results are surprising because thermal decomposition was previously considered to destroy any potential for recycling of the ionic liquid.** In the light of these experiments however thermal decomposition for the cleaning of ionic liquids is now an economically viable alternative. (paragraph bridging pp. 2-3 of the specification, emphasis added)

With the above statements then, applicant apparently acknowledges that the heating of ionic liquids is an **at least somewhat unpredictable art**. **Accordingly**, it is respectfully maintained that one of ordinary skill in the art would have to resort to undue experimentation in order to determine what **other** ionic liquids would be effective in the methods of applicant's claims 1-5 and 14-16 (and thus the processes of applicant's

claims 19-21), especially as the specification provides **no** working examples (not even for the evidently preferred “spent ionic liquid”, 1-methyl-3-ethylimidazolium chloride).

Appropriate correction is required.

Response to Arguments

10. Applicant's arguments filed March 21, 2005 with respect to the 35 U.S.C. 112, first paragraph, rejection as maintained above have been fully considered, but they have not been found persuasive. In particular, those portions of the specification noted by applicant—namely, page 1, lines 4-7 and page 3, lines 19 and 24-26—have been carefully re-reviewed, and it is appreciated that applicant refers to the 1-methyl-3-ethylimidazolium chloride as an exemplary or preferred material therein. **However**, it is respectfully submitted that when the application is viewed **as a whole**, the discussion of “surprising” results (per the paragraph bridging pp. 2-3 of the specification, as cited *supra*) and absence of working examples still supports the examiner's conclusion that instant claims 1-5, 14-16 and 19-21 are broader than the enabling disclosure. That is, the acknowledgement of “surprising” results and absence of working examples are considered to outweigh the exemplary/preferred disclosure noted by applicant, in favor of the examiner's conclusion.

Allowable Subject Matter

11. Claims 6-10, 17 and 18 are objected to as being dependent upon a rejected base claim but would be allowable **if rewritten in independent form including all limitations of the base claim and any intervening claims**.

12. The following is a statement of reasons for the indication of allowable subject

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matter:

13. In keeping with paragraphs 15.-16. of the 9/21/04 action, the prior art of record fails to teach or to have suggested methods for treating a spent ionic liquid composition comprising an ionic liquid composition and contaminants, the method comprising heating said spent ionic liquid composition under reduced pressure at or below 2 mm Hg to a temperature in a range from 200°C to 300°C so as to form a partial decomposition product thereof, separating said partial decomposition product from said contaminants and regenerating said ionic liquid composition from the separated partial decomposition product, wherein the ionic liquid composition is 1-methyl-3-ethylimidazolium chloride, per instant claim 6 (upon which instant claims 7-10, 17 and 18 at least indirectly depend).

14. The closest prior art of record is considered to be WO 99/14160 (hereinafter "WO '160"), which teaches treatment of molten salt reprocessing wastes—i.e., methods of removing ionic species from a metal salt—comprising contacting the metal salt with an ionic liquid to dissolve the metal salt, the ionic species or both, thereby forming a resultant ionic liquid composition, wherein when both the metal salt and ionic species are dissolved, the ionic liquid composition is treated to separate the ionic species therefrom and then processed to recover the metal salt (see p. 3, lines 6-11). The species removed may comprise fission product residues (see p. 3, line 25), and 1-ethyl-3-methylimidazolium chloride is disclosed as a preferred ionic liquid (see p. 4, lines 19 and 24-25). **However**, WO '160 provides no teaching nor suggestion of applicant's **specific** heating conditions—i.e., the **specific** pressure and temperature limitations

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required by instant claim 1 (upon which all other claims ultimately depend); indeed, WO '160 discloses **only** "relatively low temperature" (such as room temperature) treatment processes (see p. 3, lines 13-15; p. 4, lines 10-13).

Conclusion

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR § 1.136(a).

16. **A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR § 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.**

17. Any inquiry concerning this communication or any earlier communications from the examiner should be directed to Ardith E. Hertzog at 571-272-1347. The examiner can normally be reached on Monday through Friday (from about 8:00 a.m. - 4:00 p.m.).

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached at 571-272-1358. The fax phone number for the organization where this application is assigned is 703-872-9306.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any

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questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AEH

June 10, 2005



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